

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 066744-0053	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/US04/25807	International filing date (day/month/year) 09 August 2004 (09.08.2004)	Priority date (day/month/year) 08 August 2003 (08.08.2003)	
International Patent Classification (IPC) or national classification and IPC IPC(7): A61B 19/00 and US Cl.: 606/130			
Applicant TOMOTHERAPY INCORPORATED			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>4</u> sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 08 March 2005 (08.03.2005)		Date of completion of this report 12 December 2005 (12.12.2005)	
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer For Sarah K. Webb <i>Virginia Webb</i> Telephone No. (703) 308-0858	

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US04/25807

## Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☒ the description:
- pages 1-17 as originally filed/furnished
- pages\* NONE received by this Authority on \_\_\_\_\_
- pages\* NONE received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages NONE as originally filed/furnished
- pages\* NONE as amended (together with any statement) under Article 19
- pages\* 18 and 18.3 received by this Authority on 27 September 2005
- pages\* NONE received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages 1-12 as originally filed/furnished
- pages\* NONE received by this Authority on \_\_\_\_\_
- pages\* NONE received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, Nos. 1
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/US04/25807**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims <u>2-21</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>2-21</u>	YES
	Claims <u>NONE</u>	NO
Industrial Applicability (IA)	Claims <u>2-21</u>	YES
	Claims <u>NONE</u>	NO

**2. Citations and Explanations (Rule 70.7)**

Claims 2-21 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest an upper body positioning device that has a pivot point at one end of a frame and two assemblies connecting to the second end of the frame providing first and second ranges of motion.

Claims 2-21 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

## REPLACEMENT SHEET

1. (Cancel)
2. An upper body positioning device connectable to a couch of a radiation therapy treatment system, the upper body positioning device comprising:
  - a frame;
  - a projection extending from one end of the frame, the projection defining a pivot point;
  - a first assembly connectable to a second end of the frame, the first assembly operable to provide a first range of motion of the frame relative to the couch about the pivot point; and
  - a second assembly connectable to the first assembly, the second assembly operable to provide a second range of motion of the frame relative to the couch about the pivot point.
3. The upper body positioning device of claim 2 wherein the projection is generally spherical-shaped.
4. The upper body positioning device of claim 2 wherein the projection is generally semi-spherical-shaped.
5. The upper body positioning device of claim 2 wherein the first range of motion comprises one of a pitch rotation, a roll rotation, and a yaw rotation and the second range of motion comprises one of a pitch rotation, a roll rotation, and a yaw rotation.
6. The upper body positioning device of claim 2 wherein the first range of motion is different than the second range of motion.
7. The upper body positioning device of claim 2 wherein the first assembly comprises a track and a carriage connected to the frame, the carriage adapted to move along the track.

## REPLACEMENT SHEET

8. The upper body positioning device of claim 7 wherein the track is oriented in a generally vertical plane, the track being arcuately-shaped, the first assembly providing a pitch movement of the frame relative to the couch as the carriage moves along the arcuately-shaped track in a generally vertical direction.
9. The upper body positioning device of claim 2 wherein the second assembly comprises a track and a carriage adapted to move along the track.
10. The upper body positioning device of claim 9 wherein the track is oriented in a generally horizontal plane, the track being arcuately-shaped, the second assembly providing yaw movement of the frame relative to the couch as the carriage moves along the arcuately-shaped track in a generally horizontal direction.
11. The upper body positioning device of claim 2 further comprising a third assembly connectable to the second end of the frame, the third assembly operable to provide a third range of motion of the frame relative to the couch about the pivot point.
12. The upper body positioning device of claim 11 wherein the third range of motion comprises one of a pitch rotation, a roll rotation, and a yaw rotation.
13. The upper body positioning device of claim 11 wherein the third range of motion is different than the first range of motion.
14. The upper body positioning device of claim 11 wherein the second assembly comprises a track and a carriage adapted to move in a generally horizontal direction along the track, and wherein the third assembly comprises a shaft having a first end connectable to the frame and a second end connectable to carriage of the second assembly, the second end of the shaft adapted to be pivotable with respect to the carriage of the second assembly.

## REPLACEMENT SHEET

15. The upper body positioning device of claim 14 wherein the third assembly provides roll movement of the frame relative to the couch as the second end of the shaft pivots with respect to the carriage of the second assembly.
16. A positioning device comprising:  
a frame adapted to support a body part, the frame having a first axis;  
a first assembly adapted to move the body part about the first axis;  
a second assembly adapted to move the body part about a second axis oriented perpendicular with respect to the first axis; and  
a third assembly adapted to move the body part about a third axis oriented perpendicular with respect to the first axis and the second axis.
17. The positioning device of claim 16 wherein the first axis, the second axis, and the third axis intersect at a common point.
18. The positioning device of claim 16 further comprising a component extending from one end of the frame, the component defining a pivot point, and wherein the first assembly is operable to provide pitch movement of the body part about the pivot point, and wherein the second assembly is operable to provide yaw movement of the body part about the pivot point, and wherein the third assembly is operable to provide roll movement of the body part about the pivot point.
19. A positioning device connectable to a couch of a radiation therapy treatment system, the positioning device comprising:  
a frame; and  
a component extending from the frame, the component defining a pivot point, the component adapted to provide nearly simultaneously pitch movement, yaw movement, and roll movement of the frame relative to the couch about the pivot point.

REPLACEMENT SHEET

20. The positioning device of claim 19 further comprising a first assembly connectable to the frame and adapted to provide the pitch movement of the frame relative to the couch about the pivot point, and further comprising a second assembly connectable to the first assembly and adapted to provide the yaw movement of the frame relative to the couch about the pivot point, and further comprising a third assembly connectable to the first assembly and the second assembly and adapted to provide the roll movement of the frame relative to the couch about the pivot point.

21. The positioning device of claim 19 wherein the component is generally spherical-shaped.

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